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**MASTER OF MILITARY STUDIES**

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# AN ANALYSIS OF NON-TRADITIONAL INTELLIGENCE SURVEILLANCE AND RECONNAISSANCE (NTISR) FOR THE FUTURE OF NAVAL AVIATION

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## EXECUTIVE SUMMARY

**Title**: An analysis of Non-Traditional Intelligence Surveillance and Reconnaissance (NTISR) for the future of Naval Aviation.

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**Thesis**: Emerging small war environments and irregular warfare engagements have created a new requirement for military aviation intelligence asset utilization. Presently, minimal doctrine exists for integration of the vast majority of existing and emerging capabilities into the standard intelligence collection process. Despite the numerous technological advances, there is very little information in the joint arena discussing synchronization of developing sensor collection efforts. Current efforts have been successful because of effective coordination between operational units and intelligence elements through refined Tactics, Techniques and Procedures (TTPs). Additionally, with Non-Traditional Intelligence Surveillance and Reconnaissance (NTISR) capabilities, the lines of distinction between targeting and intelligence collection processes are blurring. The use of NTISR from various naval aircraft assets can greatly enhance the component commander's awareness of battle spaces, allowing more rapid response to enemy movements and intent.

**Discussion**: With increasing operations in the irregular, counterinsurgency and small war environments military asset utilization has reached its capacity. More non-traditional mission sets from aviation platforms should be exploited beyond their original conceptual design as a global enhancement to the military acting as an overall force multiplier. This mission shift will enhance and enable component warfare commanders to have greater situational awareness and efficiency employing forces. The ever-shifting battlefield environment requires more readily available ISR in order to match the fluid nature of the enemy. The use of NTISR resident with legacy naval aircraft assets will greatly enhance the theater commander's awareness. As a result, any lack of availability from traditional ISR presence in the battle spaces will be filled and facilitate a more rapid response to enemy movements and intent. To this end Operation Blue Thunder was established in early 2006 as a gap fill method for providing NTISR to Joint Tactical Air Controllers (JTACs) in the Multinational Defense Southeast (MND-SE) region of Iraq.

**Conclusion**: To mitigate the lack of traditional ISR coverage required from theater commanders, Non-Traditional ISR should be used in an ad hoc fashion for low intensity engagements. As a requirement, legacy aviation platforms should support Non-Traditional ISR missions and augment the lack of traditional national assets. Therefore, the NTISR assets will act as a force multiplier to enhance the battle space when other means are not available.

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## Introduction

In recent years, United States military combined forces engagements throughout the world have been largely battles in which field commanders rely heavily on the intelligence, surveillance and reconnaissance (ISR) that can be provided to them both in the planning and execution phases of a conflict. The current ISR requirement will remain the status quo for United States Military Commanders as their forces become more involved in either smaller variable wars or larger scale conventional battles. Already the ISR architecture for the Theater and Component Commanders is overextended in its reach. This exists even with unifying efforts of a net-centric war-fighting function which greatly assists military units at the company level and higher with battle space situational awareness.

As the military becomes increasingly dependent on ISR information for planning and execution of kinetic actions, the need for more diverse and readily available ISR assets has begun to starve the visual intelligence system with lack of availability. If the future of military capability is inextricably tied to the availability of ISR platforms, then the need for more diversity and use of current aviation assets in a Non-traditional manner of ISR (NTISR) will needed. This will enable the gap left by cost prohibitive and over utilized more traditional ISR platforms to be filled. The U.S. Naval Aviation community has successfully used legacy military aviation assets in order to accomplish ad hoc ISR missions for several years. Flexible utilization of current aviation assets in the United States military inventory should be adopted as doctrine for the future of meeting ISR mission demands for theater commanders.

**Development of Aerial ISR**

ISR has its roots in the earliest fundamentals of war as an art and science. The need to asses the enemy and determine a course of action is based upon strengths and weaknesses and has been pivotal since Sun Tzu. The battle field commander would look to gain information on the enemy and gather intelligence. Sun Tzu stated: "What is called 'foreknowledge' cannot be elicited from spirits, nor from gods, nor by analogy with past events, nor from calculations. It must be obtained from men who know the enemy situation."[1] Therefore, in its earliest forms, reconnaissance became the mechanism for discovering the strengths and weaknesses of the enemy.

As the art of war evolved, it transitioned from a scientific pursuit governed by a more methodical approach designed to utterly vanquish an enemy. At the end of the evolution war became a careful calculation and determination of opposition force infrastructure. The aim was to exploit the enemy disadvantages while simultaneously diminishing one's own deficiencies to achieve a strategic end state. As such, the lesson in Sun Tzu's statement remains indelibly fixed in the planning processes of war fighting.

The need for accurate assessments of enemy positions, strengths, and occupied terrain will remain in the forefront of every military commander's mind. Throughout history, military success in the tactical, operational, and strategic levels of war have all been affected positively and negatively by assumptive information with regards to the opposition forces during the campaign planning processes. The problem with an assumption when information is used for planning becomes the level of uncertainty involved with the knowledge gained. Von Clausewitz states that "the general unreliability of all information presents a special problem in war: all action takes place,

so to speak, in a kind of twilight, which, like fog or moonlight, often tends to make things seem grotesque and larger than they really are. Whatever is hidden from full view in this feeble light has to be guessed at by talent, or simply left to chance. So once again for lack of objective knowledge one has to trust to talent or luck."[2] Clausewitz captures the issues of uncertainty that are attributed to armed conflict which is a major source of friction known as the "Fog of War,"[3] easily reduced through the use of ISR.

From fog of war friction and uncertainty armed forces have strived to develop more effective methods of gathering intelligence to improve the tactical outcome when the kinetic portion of the fight ensues. Spies have always been used in the process of war fighting, but armed dragoons began to be employed in reconnoitering the forward battle space in the 18th century. This tactically enhanced battlefield situational awareness and was utilized often by Napoleon Bonaparte.

> "Strategy in Napoleonic era even more than today meant thinking and acting in an uncertain realm, in which the only ultimately reliable points of reference were the commander's understanding of the potentials and limitations of armed force and of national power. Napoleonic battle was also filled with uncertainty; but the commander possessed a surer knowledge than is possible in strategy of many of its components-terrain, strength, and position of his troops and the enemy's, often even the intentions of the other side."[4]

Cavalry reconnaissance was used in the War Between the States with both Confederate and Union forces sending armed advanced scouting parties ahead of the main body to determine enemy locations gather intelligence and conduct small scale raids. In addition, Union commanders used hot air balloon observers for the purposes of surveying enemy strengths and positions. Further evolutions of armed reconnaissance gave birth to more modern ISR, and with it, the advent manned flight with photography by the beginning of the First World War. This ISR evolution would find its way to the

skies in the form of aerial photography and gunfire spotting. Eventually, On 16 October 1912, a Bulgarian Albatros aircraft was used to perform Europe's first reconnaissance flight in combat conditions. Thus, during the First World War, photoreconnaissance was one of the earliest uses of the airplane in combat. Aviators such as Fred Zinn evolved an entire range of new flying and photography techniques to use the new technology in the equally new environment of trench warfare.[5]

Before the Second World War, modern innovation was used to convert bomber types for airborne photoreconnaissance. These bombers retained a robust defensive armament , which was vital since they were unable to avoid interception. In 1939, Flying Officer Maurice Longbottom of the Royal Air Force was among the first to suggest that airborne reconnaissance might be a task better suited to fast, small aircraft which would use their speed and high service ceiling to avoid detection and interception.[6] Although this seems obvious now, with modern reconnaissance tasks performed by fast, highflying aircraft, at the time it was radical thinking.[7] Immediately after World War II, long range aerial reconnaissance was taken up by modified jet bombers capable of flying higher or faster than the enemy. The onset of the Cold War led the development of highly specialized and secretive strategic reconnaissance aircraft or "spy planes."[8]

## Current Intelligence Imagery Collection Processes

Existing intelligence imagery collection processes are not complementary and create challenges for planners and operators. In order to maximize the capabilities of ISR assets, there should be some consideration for an adjustment to the aerial intelligence planning processes. As highlighted by Navy's Command, Control, Communication,

Computers and Intelligence, Surveillance and Reconnaissance (C4ISR) doctrine for collections, "the development of the Joint Integrated Prioritized Collection List (JIPCL) lags the Master Air Attack Plan (MAAP) phase of Air Tasking Order (ATO) development by 12 hours or more. This presents difficulties in assigning collection tasks to NTISR-capable assets during the development of the MAAP and thereby decreases the effectiveness of using NTISR. Operations and intelligence planners must investigate means by which processes can be synchronized or by which specific target-to-asset matching can happen after the MAAP."[9] While pertinent, this focus relates more towards imagery-specific NTISR pre-mission tasking and collection; or ad hoc collection by both national assets and organic strike group assets that may require a change to existing data and imagery collection architecture.

As strike group assets are under Joint Forces Air Control Center (JFACC) control in theater, mission assignments should not only be driven from specific direction by the Combined Air Operations Center (CAOC), but should also be allowed to draw from other theater assets on station willing to provide imagery as a force multiplier. JFACC Electronic Intelligence (ELINT) and ISR collection should be conducted with detailed planning. Imagery collection should also take into consideration the asset utilization down to the last available ISR platform, the potential role for that mission as a force provider and the capabilities that can be used to support theater customers. For the CAOC and the Naval Aviation assets in theater, a complete knowledge of collections systems and their inherent capabilities is an essential part of the planning processes for legacy airframes to support JFACC and theater ISR objectives in the Fifth Fleet AOR. If collection of ISR imagery is going to continue to benefit theater commanders, a

designated collection center and integration of all the pertinent information it receives from the battle space will have to be established.

**MAAP to ATO Process and Target Nomination**

The JFACC uses a six phase joint air tasking cycle to produce an ATO, which makes efficient and effective use of joint air capabilities, assigned by the JFC.[10] During phase 1, the JFACC consults its staff, usually on a daily basis, to gain a situational understanding of the war fighting effort and to discuss the "strategic direction and future operations plans."[11] The JFACC in this phase provides the most current information on Commander Maritime Forces (COMARFOR) objectives and intent, and the ground situation for both enemy and friendly forces. In the end, the JFACC issues his guidance and objectives. This guidance includes the daily apportionment decision. In phase 2, the objectives and guidance received during phase one are used to focus target development. The plans section receives and processes the COMARFOR target nominations through the CAOC combat plans division. At the conclusion of this phase, the draft Joint Integrated Prioritized Target List (JIPTL) is produced along with a detailed air apportionment recommendation.

In the third phase, the draft JIPTL is the basis for weaponeering. CAOC weaponeers identify the critical nodes of the COMARFOR targets that must be attacked to meet COMARFOR targeting objectives. The final prioritized targets are incorporated into the Master Air Attack Plan (MAAP) which forms the foundation for the (ATO).[12] After the MAAP is approved by the JFACC and the ATO is in its final stage of production, the plans section notifies the COMARFOR of any nominated targets which

will not be included in the MAAP. In return, the COMARFOR may submit critical changes to target nominations during the final phase of ATO development. The CAOC directs the execution of the ATO and an operations section monitors its execution to ensure that the COMARFOR intent is being met.

During the execution of the ATO, changes to the ground situation require a continuous coordination with the CAOC operations division to update the status of COMARFOR priority targets. This phase compares mission results to the JFACC's guidance and objectives. Battle Watch Captains (BWCs) monitor the results of the mission reports (MISREPs) and information from other intelligence sources during the execution period. The theater forces use the assessments of attack effectiveness and intelligence imagery collection to develop future targeting guidance.[13]

**Evolution of Naval NTISR in Southern Iraq**

The discussion of gapped ISR coverage has been prominent among theater commanders since the advent of aerial reconnaissance. During the deployment of Carrier Strike Group TEN (CSG-10) on the USS *Theodore Roosevelt* (CVN-71), also known as "TR" in the fleet, with Carrier Air Wing Eight (CVW-8) ISR shortfalls arose in the later portion of 2005. While deployed to the FIFTH Fleet Area of Responsibility (AOR), CVW-8 was continuing to provide vulnerability coverage to the troops operating in Iraq. TR kept its daily cycle of making wind for the air wing by sprinting south and north in the Carrier Operating Area (CVOA). At this time, the issue of secondary NTISR missions began to circulate in discussions of the Air Wing Staff. During 2005 at the

height of the surge in Iraq, the issue was maintaining a good foothold in all areas of the country in order to foster stability operations.

Naval assets in the North Arabian Gulf (NAG) began working with Multinational Task Forces both at sea and inland in order to assist with the ISR support process. The British had taken charge of Multinational Defense Southeast (MND-SE) and were also the lead for then Combined Task Force 58 (CTF-58) responsible for security and stability of the Oil Pumping Terminals in the NAG. The Fifth Fleet Component Commander (COCOM) had shifted naval assets to British Control in the NAG from CSG-10, which had already been under CTF-50 control upon arrival in the Persian Gulf. The extensive missions being covered by naval assets in the area began to create a gap in theater ISR coverage. Global hawk, Scan Eagle, and other Unmanned Aerial Vehicles (UAVs) were not available at that time to provide twenty-four hour surveillance. With the escalation in violence and increases in roadside improvised explosive device (IED) detonations in the southern Iraqi provinces, the MND-SE commander began to increase his requests for a more robust ISR coverage of the southern oil infrastructure and pipelines of Iraq. At the time UAV imagery was not capable of higher resolution imagery during the night hours, which left carrier based assets and maritime patrol aircraft to cover the ISR mission.

ISR capable aircraft would launch from either ship base or land base and fill two roles, the first being the primary mission such as strike or Carrier Air Patrol and the second would be listed as NTISR, since the primary purpose of the airframe being aloft was other than ISR. Occasionally, a naval aircraft would be tasked with the Primary mission set of ISR, but most of that tasking was being filled during the daylight hours by UAVs. In an effort to better control the MND-SE AOR and infrastructure, the Fifth Fleet

COCOM authorized HH-60 carrier based helicopters to perform ISR of southern Iraq, a mission known as "Blue Shark".

For the Blue Shark mission, the HH-60 aircraft would leave the carrier and shift tactical control (TACON) to land based MND-SE joint tactical controllers (JTACs) in the field. This ISR coverage was originally intended to fill the gaps left from over utilization of UAVs in the Fifth Fleet. MND-SE began to enjoy the availability of helicopter assets, especially the robust and very heavily armored HH-60s. As a result of cooperative lessons learned at Joint Helicopter Forces Iraq (JHF-I) based at Al-Basrah airfield, MND-SE requested to shift the HH-60s to an armed escort role for convoy protection. This shift in the "Blue Shark"[14] mission created another gap in ISR coverage previously left by the UAVs. This lack of coverage was augmented by carrier based S-3s. The original S-3 mission, known at the time as "Mohawk"[15], called for ISR along the Western border of Iraq as well as the oil fields south of Basarah. As the surge levels increased the mission adopted a new route known as "Ground Hog"[16], designed to cover the eastern border with Iran looking for insurgents and smuggling along the *Khawr Abd Allah River* (KAA) and north up the border.

The shift to multi-route tasking took on a new name and when the routes were flown concurrently the mission was referred to as "Blue Steel"[17]. MND-SE was satiated with its ISR coverage for the time being, but would regret that the primary mission tasking of the S-3s was relegated to tanker duty over the carrier for recovery cycles of the air wing. During the 2005 TR presence CVW-8 was only required by the CAOC to cover windows of vulnerability over Iraq until 2300 at which time the strike fighters would return to their carrier base. At that time, the S-3s would join the marshal stack to begin

tanking efforts for final recovery. MND-SE again was faced with a lack of ISR coverage in the off cycle night hours that would not be filled by either carrier assets or UAVs.

**Operation Blue Thunder**

By late 2005, the Helicopter Element Coordinator (HEC) working for Commander Air Group (CAG) of CVW-8 proposed to cover the ISR intervals in the middle of the night with SH-60B helicopters organic to naval assets currently operating in the NAG. Initially, the concept of operations would use an SH-60B equipped with data link and Forward Looking Infra Red (FLIR) launch from the NAG and instantly go "feet dry" to begin NTISR of the southern oil infrastructure starting from Um Qasr on the *KAA River* and working north to Basrah. Next, the platform would return through the Al Basrah oil field and by the Az Zubayr pumping station back to the NAG.

During the flight, the aircrew maintained VHF and HF contact with MND-SE JTACs in order to report any suspicious activity that would allow rapid coalition troop response. Furthermore, due to the inherent capability of the SH-60B, FLIR video would be broadcast down data link to ship based intelligence officers watching and assessing what the aircrew were seeing. Throughout the mission, FLIR video was recorded both in the helicopter and from the data link patch directly to digital video. The post mission analysis of video would be analyzed by Carrier Intelligence Center (CVIC) as well as JHF-I and MND-SE. The entire route was be to flown at 3,000 to 5,000 feet above ground level (AGL) which was assessed by the Office of Naval Intelligence (ONI) to be well out of small arms Weapons Engagement Zone (WEZ).[18] In addition, since the route was being flown at night in a darkened ship configuration the possibility of Man Portable

Anti-Aircraft Devices (MANPADs) being used against the helicopter was greatly reduced. During this portion of the surge in Iraq, ONI had assessed no night vision capability links to available MANPADs being potentially utilized by the insurgency. The research and Development followed by Concept of Operations (CONOPS) briefs were prepared by CVW-8 HEC and presented to CSG-10 early in December 2005.[19] With the strike groups approval, the battle group HEC had to obtain permission for the mission from MND-SE, CTF-58, JHF-I and FIFTH Fleet prior to implementation of a CONOPS flight. Initial concurrence came from FIFTH Fleet and JHF-I, however a difference in opinion on armament load out for the NTISR helicopter asset occurred between the two British components of MND-SE and CTF-58.

CTF-58 was in an escalatory phase of controlling sea lanes around the major oil platforms for Iraq, the Al Basrah Oil Terminal (ABOT) and the Khor Al Amaya Oil Terminal (KAAOT). The density of merchant and fishing traffic had drastically risen in the NAG. CTF-58 began to express growing concerns with regards to the safety and security of the oil terminals having noted the escalation and surge of violence in Southern Iraq. As a result, all NAG patrol missions for the SH-60B were required to carry full armament including four Hellfire missiles for deterrence if needed. This starkly conflicted with MND-SE and its new de-escalation plan, which attempted to secure the southern oil infrastructure and keep the oil flowing to restore basic public order in Basrah and southern Iraq. Consequently, the Commander of MND-SE did not want any visibly armed missions being flown in country.[20]

By late December 2005, CTF-58 and MND-SE reached concurrence on ordnance load out and missions with armed aircraft would be allowed into southern Iraq during the

night. Following unanimous concurrence from all theater commanders, the first NTISR mission, called "Blue Thunder" was flown on January 1st 2006 providing FLIR imagery and ISR coverage for nearly 3 hours during off cycle time in southern Iraq.[21] After action analysis conducted by intelligence officers of MND-SE, JHF-I and CTF-58 considered the NTISR capability provided by the SH-60B to be absolutely invaluable and wanted to push for continued support of the mission set.[22] As for the U.S. Navy opinion, the mission was met with very mixed reviews. Theater Commanders reacted with enthusiasm as did the COCOM, gracious for the Joint theater support. The mission, however, was not very well received back in the United States from the Type Wing personnel. The community leadership began to assess the new task as nothing more than mission creep and not essential, nor was it worthy of allocating time and training for its development.

**Mission Creep**

In the later part of the 1990s Mission Creep became a large concern with military commanders. Discussing changing roles and concepts of utilization of assets and personnel in non-traditional and untrained manners began to cause concern for military leadership. "In an Operations order, the Supreme Allied Commander Europe stated that Implementation Force (IFOR) should 'avoid mission creep' during Operation Joint Endeavor in Bosnia and Herzegovina (December 20, 1995- December 20, 1996)."[23] Specifically with regards to Operation Blue Thunder, Commander Helicopter Maritime Strike Wing U.S. Atlantic Fleet (COMHSMWINGLANT) had growing concerns about two mission creep issues, loss of certainty and entanglement.

A loss of certainty arises when organizations in the military begin to prefer clearly delineated tasks and then unclear or non-traditional tasks are created that breed uncertainty. Entanglement, on the other hand, is engaging in additional tasks which make it more difficult for a commander to withdraw assets upon mission conclusion, which in turn forces adherence to limited if not permanent, mandates as a consequence.[24] Additionally, COMHSMWINGLANT began to fear a misuse of military assets not previously intended nor trained for the mission was occurring. Also, a concern became the perceived cost prohibitive nature that could arise from accepting a future responsibility in additional mission tasking not previously budgeted in the training cycle.

The answer to concerns was then and is now simply that Operation Blue Thunder would lead to mission shift and not mission creep. Mission shift occurs when forces adopt tasks not initially included that, in turn, lead to mission expansion."[25] As a mission set, ISR for COMHSMWINGLANT is already provided and trained to as a standard for the wing. The only difference in Operation Blue Thunder is the over-land component of the operation. This component does add risk to the mission, but has been mitigated in the timing of the mission by flying darkened ships at night. Increased risk of a mission should not lead to mission rejection. Rather, "in developing terminology to explain mission change perhaps the focus should be turned to dining long-term objectives for using forces and assuring that the resulting tasks accord with them."[26]

**United States Naval Intelligence Surveillance and Reconnaissance Current and Future Construct**

The ISR capability of current naval strike groups consists of multiple sensors ship-based (subsurface and surface units), ground based, and space- based and airborne. All of these assets are tied into a net of data fusion center, which creates a tasking, processing, exploitation and dissemination (TPED) hub of information. The current airborne ISR systems in use by the Navy consist of a broad range of maritime aircraft, strike fighters, helicopters and UAVs. The basic list of the current naval ISR platforms includes, but is not limited to, E-2C Hawkeye, F/A-18 Hornet, SH-60B/R Seahawk and the P-3 (soon to be P-8 Maritime Patrol Aircraft). In addition to the ship and land based manned assets, the navy fields Scan Eagle, Fire Scout, Eagle Eye and the Broad Area Maritime Surveillance (BAMS) UAVs. Current U.S. Naval Aviation ISR doctrine is undergoing a dramatic shift to a more closed-loop process, which develops an ISR task from a dynamic set of interactive systems determining a hierarchy of priorities in the battle space.

The overlapping systems compare and contrast various types of imaging and determine if further asset utilization is mandated to gather additional data. The resulting historical data base consists of fused data plots from multiple imaging sources like Moving Target Indicator (MTI), Signals Intelligence (SIGNINT), Infrared (IR), Synthetic Aperture RADAR (SAR), Communications Intelligence (COMINT) and Image Intelligence (IMINT) to name a few. Various naval platforms from Subsurface, Surface, Airborne and Space gather the intelligence in its various forms for input to the data base for analysis. The analysis processing is a fixed Distributed Common Ground Stations

(DCGS) at which control of both manned and unmanned ISR platforms directs the intelligence TPED process. For the purposes of the naval system, the DCGS comprises current ISR platforms and has the capability of being enhanced by future systems currently in development.

This system of the future is referred to as the Joint Targeting and Attack Assessment Capability (JTAAC) and is the prototyping system currently being funded by Naval Sea Systems Command (NAVSEA). NAVSEA has studied ISR under strike conditions in evaluation of JTAAC, and noted significant time line reduction, bringing the kill chain in close air support (CAS) well under time requirements as set forth from the Naval Air Warfare Strike Center (NSWAC).[27] Even with the future of JTAAC and platform enhancement in the fleet, evaluation of the Navy's ISR systems has presented gaps that have been noted in a recent study. The committee on C4ISR has completed a study of the ISR architecture for the future of naval strike groups. Their premise is that "recent conflicts have demonstrated that U.S. military forces need to be more responsive in their ability to reconfigure and redirect their global defense activities. Moreover, the Bush administration's defense planning guidance requires that the U.S. military have the ability to distribute forces more widely than in the past in order to enhance forward deterrence and rapid response...Under the new organizational constructs, it is envisioned that future naval strike groups will be assembled as Carrier Strike Groups (CSGs), Expeditionary Strike Groups (ESGs) and Strike and Missile Defense Surface Action Groups (SAGs)."[28]

The C4ISR committee focused on the Sea Strike and Sea Shield missions formulated by the previous Chief of Naval Operations (CNO) in an attempt to asses the

C4ISR limitations that might exist given the current mandates for force disposition of CSGs/ESGs and SAGs. Of note, the committee concluded that under the current architecture, the navy is suffering from ISR short falls in four major areas in the Sea Shield mission and two major areas within the Sea Strike mission. Key shortfalls occur in the major combat operations such as Theater Air and Missile Defense, Undersea Warfare, Surface Warfare, Force Protection for Sea Shield. And for Sea Strike the shortfalls are Combat Operations in Strike, Naval Fire Support and Maneuver. The C4ISR committee found that "the current ISR capabilities of naval strike groups have a shortfall in persistent ground and sea-surface surveillance. Navy and Department of Defense programs in progress will improve these capabilities significantly but will still leave gaps."[29]

**NTISR Applications and Mission Sets**

Current doctrinal applications have been enacted at the Naval Strike Air Warfare Center (NSAWC) in Fallon Nevada to implement NTISR training for Carrier Air Wings. Convoy escort and Special Operations Force (SOF) insertions are trained for in the high austere desert environments of Nevada to simulate Iraq and Afghanistan. Applicable training syllabi and TTPs exist in current NSAWC doctrine for preparing Naval Aviators for potential capability to flex in oversea situations to ad hoc NTISR missions.

The primary mission of Air Wing Fallon is CAS, and to that end the strike syllabus is tailored for training fleet aviators to perform that task. Rotary Wing pilots are subjected to numerous additional qualifications during these training evolutions in which all their mission subsets posses NTISR as a specified task. Specifically, training for

support of Boat Assault Forces (BAF), SOF insertion, Helicopter Visit Board Search and Seizure (HVBSS) and Convoy escort are in their repertoire. An additional emphasis has recently been placed on Horn of Africa (HOA) and Piracy interdiction missions.

In a recent interview, Lieutenants Jason Dickerson and Allyn Uttecht, both of whom are Seahawk Weapons and Tactics Subject Matter Experts (SMEs) in the Rotary Weapons and Tactics Unit of NSAWC, stated that the current and future development of ISR/NTISR intensive training for many communities in naval aviation has become self evident. As the Naval Rotary Wing community becomes more involved in global conflicts, ISR and NTISR have become a common place for Air Wing training and Weapons and Tactics Classes as they pass through the hallowed halls of "Top Gun"[30].

Commander Scott Bishoff, the NSAWC N-8 Department Head and lead of the Rotary Wing Weapons School commented that "there exists a need for integration of current and future mission sets to cover ad hoc requests for ISR in the Maritime environment. The Navy Seahawk community should volunteer to perform such missions in current and future small scale conflicts. Both the current and future platforms available to theater commanders have robust enough Aircraft Survivability Equipment (ASE) for providing overland ISR, but the real key to mission success is in the planning."[31]

As Commander Bishoff states, all of the requirements and tools for providing ISR to theater commanders already exist in the strike group. The fear of mission creep and lack of community support in the upper echelon of leadership has hampered development of this valuable asset.[32] Future hopes for the Rotary Wing community would encompass a more aggressive pursuit of revised TTPs and training doctrine to meet the ever-rising

demand of theater ISR for combatant commanders involved in low intensity conflicts throughout littoral environments.

**NTISR Integration and Cooperative Doctrine**

Presently, minimal doctrine exists for integration of the vast majority of existing and emerging capabilities into the standard intelligence collection process. Despite the numerous technological advances, there is very little information in the joint arena discussing synchronization of developing sensor collection efforts. Current efforts have been successful because of effective coordination between operational units and intelligence elements through refined Tactics, Techniques and Procedures (TTPs). Additionally, with NTISR capabilities, the lines of distinction between targeting and intelligence collection processes are blurring.

There may be benefit in combining some of the elements of the targeting and intelligence collection processes into a combined ad hoc tasking list. According to proposed future tactical doctrine, a single task with an effects based prioritization could be generated and listed in the Joint Air and Space Operations Plan (JAOP). Air Operations Directives and the Air Tasking Order will help distinguish the importance any targets of opportunity present in theater and their level of importance based on intelligence assessments.

If the joint world eventually embraces ideas like Effects Based Operations (EBO), similar thinking may permeate and entice the air tasking cycle planners to consider collection and targeting options available outside the normal 72-hour ATO cycle. Existing doctrine should be modified to account for these emerging collection

capabilities. Some of processes may need a minor change, but others will require a major adjustment to existing Naval Aviation doctrine. While there is a need for more ISR/NTISR influence in the MAAP process, the existing tasking cycle is basically in effective and does not allow for unique tasking flexibility. From experiences gained in Iraq, the bigger issue of training individuals not previously experienced in imagery intelligence gathering becomes prevalent. Training pilots what to expect and how to appropriately collect actionable NTISR imagery is necessary for the future.

Should imagery collection be conducted solely on an ad hoc basis, without pilot training the intelligence process would suffer. A specified mission set, one in which the resident platform processing capability allows for both in-flight and post-flight analysis, should be developed as an adjustment to legacy ISR collection shortfalls. Merging new collection capabilities into the existing intelligence framework is possible without requiring development of new reporting channels. Essentially, current naval platforms will serve as additional nodes in the current NTISR collection framework, feeding further data to fusion processors for analysis.

**A Conflict in Priorities**

Available ISR intelligence collection capabilities of organic battle group platforms create a dilemma for both the pilots of the assets as well as those who plan to employ them operationally. Even though NTISR would be an added or secondary mission, there remains a potential for conflict of priorities. Should the strike group allocate or the CAOC MAAP produce an ATO with a flight of non-traditional collection assets in a primary ISR role a problem arises. The probabilities exist that any collection profile will

either reallocate platforms away from their traditional spatial orientation in a battle space, or relocate their geographic position for current operations. The constant struggle of mission planners to meet current and future operations is based largely on ISR and continues to battle for control of ad hoc mission and assets prioritization.

It will take great cooperation and teamwork between the aviation communities and planners to avoid conflict while seeking to maximize benefits for the theater commanders. When properly conducted, assets in a dual-role configuration, conducting both designated strike and collection roles at different times in a given mission have proven to be a huge force multiplier. As seen in recent operations in Iraq, operators have flown designated strike missions with additional intelligence collection periods as part of the planned profile. Another frequent role of late is specific pre-mission assignment for Time Sensitive Targeting (TST), allowing the operators to seek out emerging targets with their collection capabilities, and upon authorization, either use their ordnance to strike or pass these targets to other assets for action. Recent operational focus has solely been on NTISR imagery collection; when available, the emerging threat warning receiver capabilities will include radar and potentially other frequency susceptible emissions as well, requiring a different approach to data reporting.

## Conclusion

In closing, the future of intelligence collection in multiple theater environments has put the United States military in a precarious situation. Given the lack of available national assets, providing theater commanders with persistent ISR data has become exponentially untenable starving the system. Additionally, with current global economic shortfalls foreseeable into the future, the high cost of new asset development and

implementation will prevent the U.S. Military from providing needed ISR coverage in theater. Therefore, not just Naval Aviation Forces should adopt a shift in TTPs and planning, rather all service components should use their legacy ISR capable platforms.

In the realm of Low Intensity Conflict and Irregular Warfare, the United States has traditionally established air superiority, which would mitigate a risk to manned ISR missions. National imagery assets could be preserved for more high intensity conflicts of a traditional nature in which air parity exists and manned flights carry an increased risk to theater assets. If U.S. Naval Aviation assets can develop new missions in support of theater commanders that provide a gap fill to persistent coverage in ISR with legacy equipment, then each individual service could review its asset utilization architecture for capabilities and limitations previously not exploited. The increased availability will reduce costs and become a force multiplier for the U. S. Military. The overall benefit of force multiplication will ease the burden on U.S. armed forces currently feeling the effects of over commitment.

## Notes

[1] Sun Tzu, The Art of War (Oxford University Press, 1963), 145.

[2] Carl Von Clausewitz, On War (Princeton University Press, 1976), 140.

[3] U.S. Marine Corps, Warfighting, MCDP-1 (United States Government as represented by the Secretary of the Navy, 1997), 7.

[4] Peter Paret, Makers of Modern Strategy (Princeton University Press, 1986), 132-133.

[5] Peter Mead, The Eye in the Air, History of Air Observation and Reconnaissance for the Army 1785-1945 (Her Majesty's Stationery Office, 1983), 40-44.

[6] Ibid, 60.

[7] Ibid, 60.

[8] Society of Photo-optical Instrumentation Engineers, Society of Photographic Scientists and Engineers, Airborne Reconnaissance. (1996), 35.

[9] Committee on C4ISR for the Future Naval Strike Groups, Naval Studies Board Division on Engineering and Physical Sciences, C4ISR for the Future of Naval Strike Groups (The National Academies Press, 2006), 209.

[10] JP 3-30, Command and Control for Joint Air Operations, 5 June 2003, 3-16.

[11] Ibid, 3-18.

[12] Ibid, 3-19.

[13] Ibid, 3-20.

[14] USS Theodore Roosevelt Carrier Strike Group, Air Wing EIGHT Helicopter Element Coordinator Power Point Presentation on Operation Blue Thunder CONOPs.

[15] Ibid

[16] Ibid

[17] Ibid

[18] Ibid

[19] Ibid

[20] Ibid

[21] Ibid

[22] Ibid

[23] Adam B. Siegel, Mission Creep or Mission Misunderstood? (Joint Forces Quarterly no. 25. (Summer 2000): 112.

[24] Ibid, 113

[25] Ibid, 113

[26] Ibid, 115

[27] Ibid, 115

[28] Committee on C4ISR for the Future Naval Strike Groups, Naval Studies Board Division on Engineering and Physical Sciences, C4ISR for the Future of Naval Strike Groups (The National Academies Press, 2006), 211.

[29] Ibid, 212.

[30] Lieutenants Jason Dickerson and Allyn Uttecht, Naval Strike Air Warfare Center, Seahawk Weapons and Tactics School Instructors, Naval Air Station Fallon Nevada, interview conversation with the author, February 28, 2009.

[31] Commander Scott Bishoff, Naval Strike Air Warfare Center, N-8 Department Head, Seahawk Weapons and Tactics School, Naval Air Station Fallon Nevada, interview conversation with author, February 28, 2009.

[32] Commander Scott Bishoff, Naval Strike Air Warfare Center, N-8 Department Head, Seahawk Weapons and Tactics School, Naval Air Station Fallon Nevada, interview conversation with author, February 28, 2009.

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